CLAIMS

1. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, quantization, and variable length coding, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables N kinds ($N \geq 2$) of code amounts to be equal to or smaller than a predetermined code amount, the code amounts being obtained by applying N kinds of variable length codings on the discrete cosine transformed input digital video signal.

2. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on an input digital video signal to produce a transformed signal;

quantization estimating means for selecting a quantizer which enables N kinds ($N \geq 2$) of code amounts to be equal to or smaller than a predetermined code amount, the code amounts being obtained by applying quantization and N kinds of variable length codings on the transformed signal;

quantizing means for quantizing the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying one of the

N kinds of variable length codings which are used in said quantization estimating means, on the quantized signal.

3. A video signal coding apparatus according to claim 2, characterized in that the input digital video signal is a video signal which is previously divided into predetermined coding units, and

said quantization estimating means selects a quantizer for each of the coding units.

4. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, quantization, and first variable length coding, to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, difference predictive coding, and second variable length coding, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables both code amounts that are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed input digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a maximum DC code amount which is a larger one among a predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital

video signal, and a fixed code amount in the case where the DC components are set to a fixed length.

5. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, difference predictive coding, quantization, and first variable length coding, to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, decoding of the difference predictive coding, and second variable length coding, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables both code amounts that are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed input digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a maximum DC code amount which is a larger one among a predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and a fixed code amount in the case where the DC components are set to a fixed length.

6. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete

cosine transform on an input digital video signal to produce a transformed signal;

code amount estimating means for setting a larger one among a difference predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and a fixed code amount in the case where the DC components are set to a fixed length, as a DC estimated code amount;

quantization estimating means for selecting a quantizer which enables N kinds ($N \geq 2$) of code amounts to be equal to or smaller than a differential code amount which is obtained by subtracting the DC estimated code amount from a predetermined code amount, the code amounts being obtained by applying quantization and N kinds of variable length codings on AC components of the transformed signal;

quantizing means for quantizing the AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying one of the N kinds of variable length codings which are used in said quantization estimating means, on the quantized signal.

7. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete

cosine transform on an input digital video signal to produce a transformed signal;

predictive differential coding means for performing predictive differential coding on DC components of the discrete cosine transformed input digital video signal, and setting a code amount produced in the predictive differential coding, as a difference predictive code amount;

code amount estimating means for setting a larger one among the difference predictive code amount, and a fixed code amount in the case where the DC components are set to a fixed length, as a DC estimated code amount;

quantization estimating means for selecting a quantizer which enables N kinds ($N \geq 2$) of code amounts to be equal to or smaller than a differential code amount which is obtained by subtracting the DC estimated code amount from a predetermined code amount, the code amounts being obtained by applying quantization and N kinds of variable length codings on AC components of the transformed signal;

quantizing means for quantizing the AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying one of the N kinds of variable length codings which are used in said quantization estimating means, on the quantized signal.

8. A video signal coding apparatus characterized in that said apparatus comprises:

code amount estimating means for, for each of predetermined blocks of an input digital video signal, obtaining an average value of pixels in the block, setting the average value as a value of DC components which are obtained by performing discrete cosine transform on the digital video signal, and setting a larger one among a difference predictive code amount which is obtained by performing difference predictive coding on the DC components, and a fixed code amount in the case where the DC components are set to a fixed length, as a DC estimated code amount;

orthogonal transforming means for performing discrete cosine transform on the digital video signal for each of the blocks to produce a transform coding unit;

quantization estimating means for selecting a quantizer which enables N kinds ($N \geq 2$) of code amounts to be equal to or smaller than a differential code amount which is obtained by subtracting the DC estimated code amount from a predetermined code amount, the code amounts being obtained by applying quantization and N kinds of variable length codings on AC components of the transformed signal;

quantizing means for quantizing the AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization

estimating means; and

variable length coding manes for applying one of the N kinds of variable length codings which are used in said quantization estimating means, on the quantized signal.

9. A video signal coding apparatus according to any one of claims 6 to 8, characterized in that the input digital video signal is a video signal which is previously divided into predetermined coding units, and

said quantization estimating means selects a quantizer for each of the coding units.

10. A video signal coding apparatus according to claim 9, characterized in that the difference predictive code amount of the DC components is a difference between a predetermined code amount, and an average value of pixels of a block in the coding unit within the DC estimated code amount.

11. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, quantization, and first variable length coding, and first additional information is added to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, and second variable length coding, and adding second additional information, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables both code amounts that

are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a maximum additional information amount which is a larger one among information amounts of the first and second additional information.

12. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on an input digital video signal to produce a transformed signal;

additional information estimating means for detecting a maximum additional information amount which is a larger one among a code amount of first additional information that is to be attached to a first bit stream which is obtained by applying first variable length coding on the transformed signal, and a code amount of second additional information that is to be attached to a second bit stream which is obtained by applying second variable length coding on the transformed signal;

quantization estimating means for selecting a quantizer which enables both a code amount that is obtained by applying quantization and the first variable length coding on the transformed signal, and a code amount that is obtained by applying quantization and the second variable length coding

on the transformed signal, to be equal to or smaller than a differential code amount that is obtained by subtracting the maximum additional information amount from a predetermined code amount;

quantizing means for quantizing the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying the first or second variable length coding on the quantized signal.

13. A video signal coding apparatus according to claim 12, characterized in that the input digital video signal is a video signal which is previously divided into predetermined coding units, and

said quantization estimating means selects a quantizer for each of the coding units.

14. A video signal coding apparatus according to claim 13, characterized in that the differential code amount is a difference between an average additional information amount which is obtained by dividing the maximum additional information amount by a number of the coding units in the input digital video signal, and the predetermined code amount.

15. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, quantization, and first variable length coding, and first additional information is added to produce a first bit stream

that can be transformed to a second bit stream by using decoding of the first variable length coding, and second variable length coding, and adding the first additional information with changing to second additional information, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables both code amounts that are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a maximum additional information amount which is a larger one of information amounts of the first and second additional information, and a maximum DC code amount which is a larger one of a predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and a fixed code amount in the case where the DC components are set to a fixed length.

16. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, difference predictive coding, quantization, and first variable length coding, and first additional information is added to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable

length coding, decoding of the difference predictive coding, and second variable length coding, and adding the first additional information with changing to second additional information, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables both code amounts that are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a maximum additional information amount which is a larger one of information amounts of the first and second additional information, and a maximum DC code amount which is a larger one among a predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and a fixed code amount in the case where the DC components are set to a fixed length.

17. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on an input digital video signal to produce a transformed signal;

code amount estimating means for setting a larger one of a difference predictive code amount which is obtained by

performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and a fixed code amount in the case where the DC components are set to a fixed length, as a DC estimated code amount;

additional information estimating means for detecting a maximum additional information amount which is a larger one among a code amount of first additional information that is to be attached to a first bit stream which is obtained by applying first variable length coding on the transformed signal, and a code amount of second additional information that is to be attached to a second bit stream which is obtained by applying second variable length coding on the transformed signal;

quantization estimating means for selecting a quantizer which enables both a code amount that is obtained by applying quantization and the first variable length coding on AC components of the transformed signal, and a code amount that is obtained by applying quantization and the second variable length coding on the AC components of the transformed signal, to be equal to or smaller than a differential code amount that is obtained by subtracting the DC estimated code amount and the maximum additional information amount from a predetermined code amount;

quantizing means for quantizing AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization

estimating means; and

variable length coding manes for applying the first or second variable length coding on the quantized signal.

18. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on an input digital video signal to produce a transformed signal;

predictive coding means for performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and obtaining a difference predictive code amount;

code amount estimating means for setting a larger one of the difference predictive code amount, and a fixed code amount in the case where the DC components are set to a fixed length, as a DC estimated code amount;

additional information estimating means for detecting a maximum additional information amount which is a larger one of a code amount of first additional information that is to be attached to a first bit stream which is obtained by applying first variable length coding on the transformed signal, and a code amount of second additional information that is to be attached to a second bit stream which is obtained by applying second variable length coding on the transformed signal;

quantization estimating means for selecting a quantizer

which enables both a code amount that is obtained by applying quantization and the first variable length coding on AC components of the transformed signal, and a code amount that is obtained by applying quantization and the second variable length coding on the AC components of the transformed signal, to be equal to or smaller than a differential code amount that is obtained by subtracting DC estimated code amount and the maximum additional information amount from a predetermined code amount;

quantizing means for quantizing AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying the first or second variable length coding on the quantized signal.

19. A video signal coding apparatus characterized in that said apparatus comprises:

code amount estimating means for, for each of predetermined blocks of an input digital video signal, obtaining an average value of pixels in the block, setting the average value as a value of DC components which are obtained by performing discrete cosine transform on the digital video signal, and setting a larger one of a difference predictive code amount which is obtained by performing difference predictive coding on the DC components, and a fixed code amount

in the case where the DC components are set to a fixed length, as a DC estimated code amount;

orthogonal transforming means for performing discrete cosine transform on the digital video signal for each of the blocks to produce a transform coding unit;

additional information estimating means for detecting a maximum additional information amount which is a larger one among a code amount of first additional information that is to be attached to a first bit stream which is obtained by applying first variable length coding on the transform coding unit, and a code amount of second additional information that is to be attached to a second bit stream which is obtained by applying second variable length coding on the transform coding unit;

quantization estimating means for selecting a quantizer which enables both a code amount that is obtained by applying quantization and the first variable length coding on AC components of the transform coding unit, and a code amount that is obtained by applying quantization and the second variable length coding on the AC components of the transform coding unit, to be equal to or smaller than a differential code amount that is obtained by subtracting the DC estimated code amount and the maximum additional information amount from a predetermined code amount;

quantizing means for quantizing the AC components of

the transform coding unit to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying the first or second variable length coding on the quantized signal.

20. A video signal coding apparatus according to any one of claims 17 to 19, characterized in that the input digital video signal is a video signal which is previously divided into predetermined coding units, and

said quantization estimating means selects a quantizer for each of the coding units.

21. A video signal coding apparatus according to claim 20, characterized in that the difference predictive code amount of the DC components is a difference obtained by subtracting, from the predetermined code amount, the DC estimated code amount for a block in the coding units, and an average additional information amount which is obtained by dividing the maximum additional information amount by a number of the coding units in the input digital video signal.

22. A video signal coding method in which an input digital video signal is coded by a first system that uses discrete cosine transform, quantization, and first variable length coding, to produce a first bit stream that can be transformed to a second bit stream which is coded by a second system by using decoding of the first variable length coding, difference

predictive coding, and second variable length coding, characterized in that

when a quantizer for the quantization is to be selected,

a second system code amount in the case where the difference predictive coding and the second variable length coding are performed on a digital video signal which is discrete cosine transformed and quantized previously in time to a discrete cosine transformed input digital video signal which is the object of the quantization

is compared with a preset ideal code amount of the second system, and

when the second system code amount is equal to or smaller than the ideal code amount, a quantizer which performs coding at a first target code amount that is previously determined in the first system is selected, and

when the second system code amount is larger than the ideal code amount, a quantizer which performs coding at a code amount that is smaller than the first target code amount is selected.

23. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, difference predictive coding, quantization, and first variable length coding to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, decoding of the difference

predictive coding, and second variable length coding, characterized in that

when a quantizer for the quantization is to be selected,

a second system code amount in the case where the difference predictive coding and the second variable length coding are performed on a digital video signal which is discrete cosine transformed, difference predictive coded, and quantized previously in time to a discrete cosine transformed input digital video signal which is the object of the quantization

is compared with a preset ideal code amount of the second system, and

when the second system code amount is equal to or smaller than the ideal code amount, a quantizer which performs coding at a first target code amount that is previously determined in the first system is selected, and

when the second system code amount is larger than the ideal code amount, a quantizer which performs coding at a code amount that is smaller than the first target code amount is selected.

24. A video signal coding method according to claim 22 or 23, characterized in that the ideal code amount is stepwise increased by a substantially constant value with the passage of time.

25. A video signal coding method according to ~~any one~~

claim 22 or 23

~~of claims 22 to 24~~, characterized in that, when the second system code amount is larger than the ideal code amount, a quantizer which performs coding at a code amount that is obtained by subtracting a difference between the second system code amount and the ideal code amount from the first target code amount is selected.

claim 22 or 23

26. A video signal coding method according to ~~any one of claims 22 to 25,~~ characterized in that the digital video signal which is discrete cosine transformed, and quantized previously in time means a predetermined partial signal which is previous to the discrete cosine transformed input digital video signal which is the object of the quantization.

27. A video signal coding apparatus in which an input digital video signal is coded by a first system that uses discrete cosine transform, quantization, and first variable length coding, to produce a first bit stream that can be transformed to a second bit stream which is coded by a second system by using decoding of the first variable length coding, difference predictive coding, and second variable length coding, characterized in that

said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on the input digital video signal to produce a transformed signal;

quantizing means for quantizing the transformed signal

to produce a quantized signal;

DC component code amount estimating means for estimating a difference predictive code amount in the case where the difference predictive coding is performed on DC components of a digital video signal which is discrete cosine transformed and quantized previously in time to the transformed signal which is the object of the quantization in said quantizing means;

second-system code amount estimating means for estimating a second system code amount which is a total of the difference predictive code amount, and a code amount in the case where the second variable length coding is performed on AC components of the digital video signal which is discrete cosine transformed and quantized previously in time;

quantization estimating means for comparing the second system code amount with a preset ideal code amount of the second system, and, when the second system code amount is equal to or smaller than the ideal code amount, selecting a quantizer which performs coding at a first target code amount that is previously determined in the first system, and, when the second system code amount is larger than the ideal code amount, selecting a quantizer which performs coding at a code amount that is smaller than the first target code amount; and

variable length coding means for applying the first variable length coding on the quantized signal, and wherein

said quantizing means quantizes AC components of the transformed signal which is an object of the quantization, by using said quantizer which is selected by said quantization estimating means, thereby producing the quantized signal.

28. A video signal coding apparatus in which an input digital video signal is coded by using discrete cosine transform, difference predictive coding, quantization, and first variable length coding to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, decoding of the difference predictive coding, and second variable length coding, characterized in that

said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on the input digital video signal to produce a transformed signal;

quantizing means for quantizing the transformed signal to produce a quantized signal;

DC component code amount estimating means for estimating a DC code amount in the case where the difference predictive coding is performed on DC components of a digital video signal which is discrete cosine transformed, difference predictive coded, and quantized previously in time to the transformed signal which is the object of the quantization in said quantizing means;

second-system code amount estimating means for estimating a second system code amount which is a total of the DC code amount, and a code amount in the case where the second variable length coding is performed on AC components of the digital video signal which is discrete cosine transformed, difference predictive coded, and quantized previously in time;

quantization estimating means for comparing the second system code amount with a preset ideal code amount of the second system, and, when the second system code amount is equal to or smaller than the ideal code amount, selecting a quantizer which performs coding at a first target code amount that is previously determined in the first system, and, when the second system code amount is larger than the ideal code amount, selecting a quantizer which performs coding at a code amount that is smaller than the first target code amount; and

variable length coding means for applying the first variable length coding on the quantized signal, and wherein

said quantizing means quantizes AC components of the transformed signal which is an object of the quantization, by using said quantizer which is selected by said quantization estimating means, thereby producing the quantized signal.

29. A video signal coding apparatus according to claim 27 or 28, characterized in that the ideal code amount is stepwise increased by a substantially constant value with the passage

of time.

30. A video signal coding apparatus according to ~~any one of claims 27 to 29,~~ claim 27 or 28 characterized in that, when the second system code amount is larger than the ideal code amount, said quantization estimating means selects a quantizer which performs coding at a code amount that is obtained by subtracting a difference between the second system code amount and the ideal code amount from the first target code amount.

31. A video signal coding apparatus according to ~~any one of claims 27 to 30,~~ claim 27 or 28 characterized in that the digital video signal which is discrete cosine transformed and quantized previously in time means a predetermined partial signal which is previous to the discrete cosine transformed input digital video signal which is the object of the quantization.

32. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, quantization, and first variable length coding, and first additional information is added to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, difference predictive coding, and second variable length coding, and adding the first additional information with changing to second additional information, characterized in that

in the quantization, quantization is performed while selecting a quantizer which enables both code amounts that

are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a larger one among a first total in which a fixed code amount in the case where DC components of the discrete cosine transformed input digital video signal are set to a fixed length is added to an information amount of the first additional information, and a second total in which a difference predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal is added to an information amount of the second additional information.

33. A video signal coding method in which an input digital video signal is coded by using discrete cosine transform, difference predictive coding, quantization, and first variable length coding, and first additional information is added to produce a first bit stream that can be transformed to a second bit stream by using decoding of the first variable length coding, decoding of the difference predictive coding, and second variable length coding, and adding the first additional information with changing to second additional information, characterized in that

in the quantization, quantization is performed while

selecting a quantizer which enables both code amounts that are obtained by applying the first and second variable length codings on AC components of the discrete cosine transformed digital video signal, to be equal to or smaller than a differential code amount that is obtained by subtracting, from a predetermined code amount, a larger one among a first total in which a difference predictive code amount which is obtained by performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal is added to an information amount of the first additional information, and a second total in which a fixed code amount in the case where DC components of the discrete cosine transformed input digital video signal are set to a fixed length is added to an information amount of the second additional information.

34. A video signal coding apparatus characterized in that said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on an input digital video signal to produce a transformed signal;

first detecting means for detecting a first total amount of a fixed code amount in the case where DC components of the transformed signal are set to a fixed length, and a code amount of first additional information that is to be attached to a first bit stream which is obtained by applying first variable

length coding on the transformed signal;

second detecting means for detecting a second total amount of a difference predictive code amount which is obtained by performing difference predictive coding on the DC components of the transformed signal, and a code amount of second additional information that is to be attached to a second bit stream which is obtained by applying second variable length coding on the transformed signal;

quantization estimating means for selecting a quantizer which enables both a code amount that is obtained by applying quantization and the first variable length coding on AC components of the transformed signal, and a code amount that is obtained by applying quantization and the second variable length coding on the AC components of the transformed signal, to be equal to or smaller than a differential code amount that is obtained by subtracting a larger one among the first total amount and the second total amount from a predetermined code amount;

quantizing means for quantizing the AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying the first or second variable length coding on the quantized signal.

35. A video signal coding apparatus characterized in

that said apparatus comprises:

orthogonal transforming means for performing discrete cosine transform on an input digital video signal to produce a transformed signal;

predictive coding means for performing difference predictive coding on DC components of the discrete cosine transformed input digital video signal, and obtaining a difference predictive code amount;

first detecting means for detecting a first total amount of the difference predictive code amount, and a code amount of first additional information that is to be attached to a first bit stream which is obtained by applying first variable length coding on the transformed signal;

second detecting means for detecting a second total amount of a fixed code amount in the case where DC components of the transformed signal are set to a fixed length, and a code amount of second additional information that is to be attached to a second bit stream which is obtained by applying second variable length coding on the transformed signal;

quantization estimating means for selecting a quantizer which enables both a code amount that is obtained by applying quantization and the first variable length coding on AC components of the transformed signal, and a code amount that is obtained by applying quantization and the second variable length coding on the AC components of the transformed signal,

to be equal to or smaller than a differential code amount that is obtained by subtracting a larger one among the first total amount and the second total amount from a predetermined code amount;

quantizing means for quantizing the AC components of the transformed signal to produce a quantized signal, by using said quantizer which is selected by said quantization estimating means; and

variable length coding manes for applying the first or second variable length coding on the quantized signal.

36. A video signal coding apparatus characterized in that said apparatus comprises:

motion vector detecting means for, for an input image, detecting a motion vector with respect to a predetermined reference image;

difference image producing means for, for the input image, producing a first difference image with respect to the reference image;

filter coefficient determining means for calculating visual importance of the input image on the basis of the input image and the first difference image, and determining a filter coefficient for performing a filter process on the input image;

filter processing means for performing a filter process on the input image by using the filter coefficient, to produce a filter image;

motion compensating means for performing motion compensation on the filter image by using the motion vector, to produce a second difference image; and

coding means for performing coding on the second difference image to produce a coded data.

37. A video signal coding apparatus according to claim 36, characterized in that said filter coefficient determining means calculates visual importance of the input image on the basis of an activity of the input image and an activity of the first difference image, and determines the filter coefficient.

38. A video signal coding apparatus according to claim 36 or 37, characterized in that said filter coefficient determining means selects the filter coefficient for performing the filter process, from a plurality of filter coefficient candidates.

39. A video signal coding apparatus characterized in that said apparatus comprises:

motion vector detecting means for, for an input image, detecting a motion vector with respect to a predetermined reference image;

difference image producing means for, for the input image, producing a first difference image with respect to the reference image;

first filter processing means for performing a first

filter process on the input image to produce a first filter image;

filter parameter determining means for calculating visual importance of the input image on the basis of the input image and the first difference image, and determining a filter parameter for performing a second filter process on the input image and the first filter image;

second filter processing means for performing a second filter process on the input image and the first filter image by using the filter parameter, to produce a second filter image;

motion compensating means for performing motion compensation on the second filter image by using the motion vector, to produce a second difference image; and

coding means for performing coding on the second difference image to produce a coded data.

40. A video signal coding apparatus according to claim 39, characterized in that said filter parameter determining means calculates the visual importance on the basis of an activity of the input image and an activity of the first difference image, and determines the filter parameter.

41. A video signal coding apparatus according to claim 39 or 40, characterized in that said filter parameter determining means selects the filter parameter for performing the second filter process, from a plurality of filter parameter candidates.

42. A video signal coding apparatus according to ~~any one of claims 36 to 41,~~ claims 36, 37, 39 or 40 characterized in that the filter coefficient or the filter parameter is a coefficient in the predetermined unit of block.

43. A video signal coding apparatus according to ~~any one of claims 36 to 41,~~ claims 36, 37, 39 or 40 characterized in that the filter coefficient or the filter parameter is a coefficient in the unit of pixel.

44. A video signal coding apparatus according to ~~any one of claims 36 to 43,~~ claims 36, 37, 39 or 40 characterized in that said filter coefficient determining means or said filter parameter determining means determines the filter coefficient or the filter parameter by curved surface approximation using the visual importance.

45. A video signal coding apparatus according to ~~any one of claims 36 to 43,~~ claims 36, 37, 39 or 40 characterized in that said filter coefficient determining means or said filter parameter determining means places the visual importance at one of four corners in a block constituting the input image, and determines the filter coefficient or the filter parameter while.

46. A video signal coding apparatus according to ~~any one of claims 36 to 43,~~ claims 36, 37, 39 or 40 characterized in that said filter coefficient determining means or said filter parameter determining means performs edge detection on a block constituting the input image, and, when an edge exists, places

the visual importance in an edge interface, and determines the filter coefficient or the filter parameter.

47. A video signal coding apparatus according to any one of claims 36 to 46, characterized in that said motion vector detecting means performs same motion vector detection on the input image to produce a difference image, and a motion vector corresponding to a picture type of the input image.

48. A video signal coding apparatus according to ~~any one of claims 36 to 46~~ claims 36, 37, 39 or 40, characterized in that said motion vector detecting means performs motion vector detection on the input image by bidirectional interframe prediction to produce a difference image, and a motion vector corresponding to a picture type of the input image.

49. A video signal coding apparatus characterized in that said apparatus comprises:

difference image producing means for performing motion vector detection in the unit of block on an input image, to produce its motion vector, block type information indicative of information of the block coding, and a first difference image;

filter parameter calculating means for calculating visual importance in a block in the unit of block, from the input image, the block type information, and the first difference image, and calculating a filter parameter for controlling a degree of filtering in the unit of pixel, from

the visual importance;

filter coefficient determining means for determining a filter coefficient from a plurality of filter coefficient candidates, based on the filter parameter;

filter calculating means for performing a filter calculation on the input image by using the filter coefficient to produce a filter image;

motion compensating means for performing motion compensation on the filter image by using the motion vector and the block type information, to produce a second difference image; and

coding means for performing coding on the second difference image to produce a coded data.

Sub A1

50. A program recording medium characterized in that a program for realizing all or a part of means of the video signal coding apparatus according to any one of claims 2 to 3, 6 to 10, 12 to 14, 17 to 21, 27 to 31, and 34 to 49 by a computer is stored in said medium.